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# 11. The impact of the venture capitalists' service and monitoring activities on control systems and performance of entrepreneurial firms

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## INTRODUCTION

By being represented on the entrepreneurial firm's board of directors, the venture capitalist (VC) can play an active role in the strategy development and evaluation process of the entrepreneurial firm by offering value-adding activities (Gorman and Sahlman, 1989; MacMillan et al., 1989; Rosenstein et al., 1993; Sapienza et al., 1996; Fried et al., 1998; Deakins et al., 2000; Gabriellsson and Huse, 2002). Seminal work on the VC's added value (for example, MacMillan et al., 1989; Sapienza and Timmons, 1989; Rosenstein et al., 1993; Ehrlich et al., 1994) has reached a general consensus as to which value-adding activities are provided to entrepreneurial firms (Sapienza, 1992; Sapienza et al., 1996). However, there is little agreement in the literature as to whether the VC's board activities actually increase entrepreneurial firm performance (ibid.; Flynn, 2001).

This chapter attempts to resolve the VC 'added value' proposition by opening up the 'black box' between the VC's value-adding activities on the one hand, and the entrepreneurial firm's performance on the other. Previous research mainly focuses on partial relationships between either the impact of the VC's value-adding activities on the entrepreneurial firm's performance, or the impact of the VC's value-adding activities on the development of (control) systems present in the entrepreneurial firm. This study adopts a multi-theoretical approach and integrates both streams of research in order to get a more fine-grained insight into the VC value-added proposition, such as considering the impact of mediating and moderating mechanisms through which the VC may enhance or even erode the

entrepreneurial firm's financial performance. The focal point in this study is to examine both mediating and moderating mechanisms which may impact on how the VC influences the entrepreneurial firm's performance by aligning its value-adding activities (that is, monitoring and service activities) to the entrepreneurial firm's control systems. As VCs tend to be short-term and efficiency-orientated investors (Ruhnka and Young, 1987; Gomez-Meija et al., 1990; Steier and Greenwood, 1995; Zahra, 1996b), the control systems of the entrepreneurial firm are supposed to help them safeguard their investment by holding the entrepreneurial team accountable (Ruhnka and Young, 1987). At the same time, these control systems enable the entrepreneurial firm to grow and expand more quickly (see also Churchill and Lewis, 1983; Flynn, 2001) as they promote the more efficient and effective use of the resources provided by the VC to the entrepreneurial firm.

The structure of the chapter is as follows. First we present the theories and hypotheses, and then we discuss the methodology and the data analysis techniques. Finally we report the results, and conclude with a discussion of the implications of our findings.

## THEORY AND HYPOTHESES

### Value-adding Activities

Board theory indicates that there are two generic types of value-adding activities that boards (Zahra and Pearce, 1989; Goodstein et al., 1994), and thus VCs (Gabrielsson and Huse, 2002), provide for the entrepreneurial firm: *service activities* and *monitoring activities*. According to the resource-based view (Peteraf, 1993), external board members provide service activities and add value to the firm through their engagement in the development and evaluation of company strategy (Stiles and Taylor, 2001). Strategic involvement varies from taking and shaping strategic decisions, to setting the strategic context (McNulty and Pettigrew, 1999). Resource dependency theory (Pfeffer and Salancik, 1978) emphasizes service activities of external board members who act as 'boundary spanners' and provide access to external networks. Board members' networking activities refer to interlocking and connecting activities on behalf of the firm in order to secure critical resources and develop and maintain long-term relationships (ibid.). Studies on VCs' post-investment service activities indicate that VCs provide service activities such as recruiting additional managers to the firm, acting as an interface with the investor group, providing assistance on operations, facilitating contacts with new

finance partners, supplying the firm with advisers and providing assistance with the introduction of new products/services to the market (for example, MacMillan et al., 1989; Sapienza and Timmons, 1989; Harrison and Mason, 1992; Rosenstein et al., 1993; Ehrlich et al., 1994).

According to agency theory, board members, in particular those representing significant external investments, can add value to the firm by engaging in a wide range of monitoring activities (Fama and Jensen, 1983). These activities consist mainly of control tasks, such as evaluating strategic initiatives and appointing, disciplining or removing ineffective individual managers or management teams (see Barnhart et al., 1994). VC monitoring activities usually cover monitoring financial performance, monitoring operational performance, and the evaluation of the entrepreneurial firm's business strategy and product market opportunities (MacMillan et al., 1989; Sapienza and Timmons, 1989; Harrison and Mason, 1992; Rosenstein et al., 1993; Ehrlich et al., 1994).

### **The VC's Contribution to the Entrepreneurial Firm**

Agency theory suggests that the VC can reduce the agency problem not only by monitoring, but also by forcing the entrepreneurial firm to use control systems (see Jensen and Meckling, 1976). From an agency perspective, these control systems may function as an efficient and time-consuming substitute for the VC's monitoring activities. The relevance of these control systems is that like monitoring activities they help the VC to reduce information asymmetry problems and prevent the entrepreneur from behaving opportunistically. Hence, the application of control systems by the entrepreneurial firm would increase organizational performance (ibid.).

VCs are short-term and efficiency-orientated investors (Ruhnka and Young, 1987; Gomez-Meija et al., 1990; Steier and Greenwood, 1995; Zahra, 1996b). Therefore, it is important for the VC that entrepreneurial firms pass their stages of development more quickly. Stages of development theory suggests that established control systems are a necessary requirement for entrepreneurial firms in order to expand, as they help the entrepreneurial firm to make more efficient and effective use of its resources (Churchill and Lewis, 1983; Scott and Bruce, 1987). The role of VCs aimed at the entrepreneurial firm passing life-cycle stages more quickly is also supported by Flynn (2001), who reports that VCs emphasize various control systems for both early-stage (seed or start-up) and later-stage investments (mezzanine or bridge investments). Flynn also suggests that because entrepreneurs or scientists are often primarily focused on innovative activities or the technical core, the VC's activities can help the entrepreneurial firm to

establish effective control systems, thereby facilitating fast organizational growth (Flynn, 2001).

In the next paragraphs we shall explore how the VC board activities impact on the degree and nature of the entrepreneurial firm's control systems (that is, quality system, incentive and reward system, and cost control system), and subsequently the entrepreneurial firm's performance.

### **The impact of the VC service activities**

A quality system is a well-known tool for achieving this through workforce empowerment aimed at continuous improvement (Gordon, 1996, p. 478): 'In their empowered role, employees are expected to call attention to a specific quality problem in their normal work, look for ways to perform their jobs better, and identify ways to improve organizational functioning to create continuous improvement in organizational processes'. By implementing quality systems, entrepreneurial firms shape the conditions that enable them to expand and achieve high organizational performance. Based on Stiles and Taylor's (2001) remarks on quality indices, we suggest that the VC's representatives might add value to the entrepreneurial firm by making its management team aware of the benefits of quality systems, and by subsequently providing guidance to the entrepreneurial firm's management team with regard to the process of adopting and running quality systems. We therefore hypothesize:

- H1: The degree of VC service activities is positively associated with the degree of sophistication of a quality system in the entrepreneurial firm.

The effectiveness of even highly skilled employees can be enhanced when they are motivated to perform (Huselid, 1995). Therefore, next to the firm's application of a quality system, the firm's utilization of an incentive and reward system is an effective instrument to increase the entrepreneurial firm's productivity, by making better use of the knowledge, skills and abilities of the firm's current and potential employees (*ibid.*, p. 637). Since incentive and reward systems aim at increasing employees' motivation, they are also likely to reduce shirking and to enhance the retention of quality employees while encouraging non-performers to leave the firm (Huselid, 1995). As part of their service activities, VC-appointed directors are likely to add value by developing or reviewing the appropriateness of the entrepreneurial firm's system of performance measurement and compensation (see Andrews, 1980, p. 27). From the VC's perspective this serves to align the incentives of the entrepreneurial firm's employees with

the firm's key success factors, that is, making them more productive. We therefore suggest that:

- H2: The degree of VC service activities is positively associated with the degree of sophistication of an incentive and reward system in the entrepreneurial firm.

Since entrepreneurs are more orientated towards the primary process of the firm, the VC's expertise in cost control may help the entrepreneurial firm to operate more efficiently (Flynn, 2001). As short-term and efficiency-orientated investors (Ruhnka and Young, 1987; Gomez-Meija et al., 1990; Steier and Greenwood, 1995; Zahra, 1996b), the VC is likely to emphasize the importance of efficient production in order to direct the entrepreneurial firm towards relatively short-term goals. In doing so, VC service activities might encourage the entrepreneurial firm to employ information systems capturing its cost structures, thereby enabling the firm to improving its plant efficiency, competitiveness in the market and so on. We therefore hypothesize that:

- H3: The degree of VC service activities is positively associated with the degree of sophistication of a cost control system in the entrepreneurial firm.

The relevance of the entrepreneurial firm's control systems is twofold. First, control systems are substitutes of the VC's monitoring activities, which hence reduce the moral hazard of the entrepreneur and subsequently have a positive impact on the entrepreneurial firm performance. Second, control systems are necessary requirements for entrepreneurial firms in order to expand, as they help the entrepreneurial firm to make more efficient and effective use of its resources (Churchill and Lewis, 1983; Scott and Bruce, 1987). In line with the previous hypotheses, it is thus likely that the effect of the VC service activities indirectly influence the entrepreneurial firm's performance via the set of control systems. In other words, we suggest that:

- H4: The entrepreneurial firm's control systems positively mediate the effect of VC service activities on the entrepreneurial firm's financial performance.

### **The impact of the VC monitoring activities**

Formal analyses of the agency problem show that the agency costs of monitoring (including the presence of control systems), bonding and

residual losses are partly complementary in nature (Jensen and Meckling, 1976). While monitoring and bonding activities can lead to a reduction of residual losses, these activities themselves at the same time create both set-up and operating costs (Williamson, 1988a, 1988b). As a consequence, the cumulative use of various monitoring and bonding activities can lead to an increase in total agency costs. Particularly with reference to the debate about the impact of corporate governance mechanisms on corporate performance, research indicates that substitutional effects are likely to exist between internal and external mechanisms of corporate governance (Walsh and Seward, 1990; Weir et al., 2002) such as managerial ownership, outside block ownership, control by banks, capital structure, managerial remuneration, financial reporting and control as well as board structure (Beatty and Zajac, 1994; Weir et al., 2002; Hermalin and Weisbach, 2003). Consequently, we suggest that when VCs focus closely on monitoring and various control systems are already present in the entrepreneurial firm, an unnecessary duplication of efforts may occur.

If non-executive directors deal with relational risk by focusing on the use of control mechanisms mainly because they are suspicious of management, the consequential development of distrust between boards and managers is likely to reduce the ability of directors to contribute to strategy development and resource access (Roberts et al., 2005). This is because managers are becoming more concerned with justifying their managerial decisions to the board rather than using the directors' expertise and contacts to improve firm performance (Sundaramurthy and Lewis, 2003). Landström (1993) in particular criticizes the narrow focus on potential agency conflicts adopted by VCs, pointing out that monitoring mechanisms are likely to be counter-productive as they lower the level of trust between the VC and the entrepreneur. This also means that principals' and agents' perception of the risk of opportunistic behaviour and the appropriateness of the control systems is of great importance (Arthurs and Busenitz, 2003; Busenitz et al., 2004). If VCs overestimate the extent of agency problems, they might not only waste precious resources in developing and implementing superfluous monitoring mechanisms, but they might also damage the firm's performance by inhibiting the management team from utilizing their and the VCs' abilities and resources to the fullest potential. This implies that VCs monitoring activities are likely to have a negative effect on the relationship between both types of control systems and firm performance. These findings and arguments lead to:

- H5: VC monitoring activities negatively moderate the effect of the entrepreneurial firm's control systems on its financial performance.



## METHODOLOGY

### **Sample and Data Collection Procedure**

We sent questionnaires to 441 Dutch venture capital-backed small firms, which we identified from the Reach database (for example, capturing business information from the Dutch chambers of commerce), annual reports and Internet sites of venture capitalists. The mail survey produced 93 usable questionnaires. The net response rate is about 21 per cent. Two Kolmogorov–Smirnov two-sample tests provide strong evidence (that is, the asymptotic significance (2-tailed) is 0.940 for the firm's age and 0.477 for the firm's industry) that both the respondent and the non-respondent firms come from the same distribution.

### **Measures**

#### **Dependent variables**

The entrepreneurial firm's performance is assessed by a financial and a non-financial performance measure, which are based on the studies of Manigart et al. (1995) and Sapienza et al. (1996). The scales have a high disclosure rate, strong internal consistency, and relatively strong inter-rater reliability (Chandler and Hanks, 1993). Previous studies comparing VCs' and CEOs' assessments prove these measures to be highly reliable and valid (Sapienza, 1992; Sapienza and Gupta, 1994). The financial performance measure comprises: (i) sales growth; (ii) market share; (iii) gross margin; (iv) return on investment; (v) market value of company shares; and (vi) liquidity position. For each item, the entrepreneur's satisfaction score is multiplied by a corresponding importance score (see Zahra, 1996a). The importance items are measured by using a Likert scale from 1: Not important, to 6: Very important, and the satisfaction scores with 1: Not satisfied, to 6: Very satisfied. The scales are calculated by dividing the sum of items' weighted scores by the sum of the number of items. Cronbach's  $\alpha$  is 0.76, which is well above the lower limits of acceptability of 0.50–0.60 (Nunnally, 1978).

The non-financial performance measure consists of: (i) development of new products and organizational processes; (ii) development of new target markets; (iii) operational efficiency; (iv) employees' development; (v) firm's stability; and (vi) preparation for exit of venture capitalist. The scale is computed in a similar manner as the financial performance measure. Cronbach's  $\alpha$  is 0.56.



### **Independent variables**

Table 11.1 provides an overview of the scales analysis and discriminant validity of the independent variables. The VC's board role scales are the VC service and monitoring activities. These items are based on previous studies (MacMillan et al., 1989; Sapienza and Timmons, 1989; Harrison and Mason, 1992; Rosenstein et al., 1993; Ehrlich et al., 1994). The entrepreneurs are asked to indicate the intensity by which they agree or disagree with a number of propositions about the value-adding activities provided by their venture capitalist(s). The propositions are measured by using a Likert scale from 1: Fully disagree, to 5: Fully agree. The two board role scales are computed by dividing the total sum of the item scores by the number of items. Cronbach's  $\alpha$  of the VC service activities is 0.76, and of VC monitoring activities is 0.80.

The items of the cost control system scale are based on Miller (1988). The entrepreneurs are asked how important they perceive each item to be for their company by using a Likert scale from 1: Not important, to 7: Very important. The scale is calculated by summing the item scores, and then dividing the total sum by the total number of the items. Cronbach's  $\alpha$  is 0.56.

The measures of the company's incentive and reward system and quality system are based on Huselid (1995). For each scale's items the entrepreneur has to indicate the percentage of his/her workforce to whom the particular work practices apply. The scales are computed by the sum of the items divided by the number of the items. Cronbach's  $\alpha$  of the incentive and reward system is 0.68, and of the quality system is 0.51.<sup>1</sup>

### **Control variables**

We use the following control variables: firm's age, firm's size, and two industry dummy variables, that is, information and communications technology (ICT) life science industries, and services/sales industries. These covariates take into account that VCs tend to be more involved in younger and smaller firms, and firms operating in emergent industries (Elango et al., 1995).

### **Common method variance**

Harman's single factor test (cf. Podsakoff et al., 2003) provides evidence that the analysis is not subject to common method bias. The items of our measures and the construction of the scales are rather different from each other (Harrison and McLaughlin, 1996), which reduces the common method bias. Moreover, the questionnaire design separated measurements of the dependent and independent variables psychologically, and guaranteed the respondents' anonymity (see also Podsakoff et al., 2003 about common method bias strategies).

*Table 11.1 Overview of the scale analysis and discriminant validity of the independent variables*

VC's value-adding activities	Service activities	Monitoring activities	
Recruit additional managers	<b>0.66</b>	0.13	
Interface with the investor group	<b>0.64</b>	0.30	
Assistance on introducing new products/services to the market	<b>0.72</b>	0.14	
Assistance on operations	<b>0.68</b>	-0.15	
Getting new finance partners	<b>0.64</b>	0.26	
Contact with advisers	<b>0.63</b>	0.24	
Financial monitoring	0.16	<b>0.81</b>	
Evaluate our business strategy	0.13	<b>0.76</b>	
Operational monitoring	0.24	<b>0.79</b>	
Evaluate product-market opportunities	0.09	<b>0.77</b>	
Percentage of variance explained (total: 54.72%)	27.52%	27.20%	

  

Control systems	Incentive and reward system	Cost control system	Quality system
Formal information-sharing programme	<b>0.56</b>	0.23	0.10
Formal job analysis	<b>0.74</b>	-0.21	-0.14
Formal performance appraisals	<b>0.76</b>	0.02	-0.15
Performance appraisals determine compensations	<b>0.62</b>	-0.06	0.05
Attitude surveys on a regular basis	<b>0.63</b>	0.04	0.28
Use of cost centres	-0.07	<b>0.81</b>	0.10
Use of standard costs	0.29	<b>0.73</b>	-0.01
Minimization of advertising expenditures	-0.13	<b>0.64</b>	-0.16
Price cutting	-0.09	<b>0.34</b>	-0.65
Participation in quality of work life programmes, quality circles, and/or labour management teams	-0.07	0.01	<b>0.66</b>
Access to a formal grievance procedure and/or complaint resolution system	0.07	0.13	<b>0.80</b>
Percentage of variance explained (total: 53.28%)	21.30%	16.67%	15.31%

## Data Analysis

Two-stage-least-squares (2SLS) estimation techniques are used for calculating the effect of the VC service activities on the entrepreneurial firm's control systems (hypotheses 1–3). The 2SLS technique is preferred to ordinary least squares (OLS) (see also Berry, 1984, p. 15), because of possible reciprocal effects between independent and dependent variables. Instruments for VC service activities are the percentage of shares held by the VC, and the frequency of contact with the VC. The instruments have a Pearson correlation of 0.41 ( $p < 0.01$ ) and 0.22 ( $p < 0.05$ ) with the VC service activities, respectively. OLS moderated regression techniques are used to calculate the interaction effects of the VC monitoring activities and the set of the entrepreneurial firm's control systems to the firm's performance (hypothesis 5). The main effects of the firm's set of control systems on its performance are used to test hypothesis 4.

## RESULTS

Summary descriptive statistics and pairwise Pearson correlations are provided in Table 11.2. The VC monitoring activities have a high positive correlation with the entrepreneurial firm's cost control system ( $p < 0.01$ ) and with the ICT/life science industries ( $p < 0.01$ ). The latter might be explained by the VC's attempts to reduce information asymmetry in dynamic environments (Amit et al., 1998). Conforming to findings by Elango et al. (1995), VC service activities have a high negative correlation with firm size ( $p < 0.05$ ), firm age ( $p < 0.05$ ), and a positive correlation with ICT/life science firms ( $p < 0.01$ ). Finally, there is a positive correlation between both types of board activities ( $p < 0.01$ ), which is consistent with MacMillan et al.'s (1989) active and passive VC involvement types.

Table 11.3 shows the regression equations that are computed to test hypotheses 1–3. Since we do not find support for an effect of the VC service activities on the entrepreneurial firm's policy to adopt a quality system, hypothesis 1 is not accepted. However, hypothesis 2 is accepted, that is, entrepreneurial firms which apply an incentive and reward system are associated with VCs adding value through their service activities ( $p < 0.05$ ). Hypothesis 3 is also supported, that is, VC service activities help the entrepreneurial firms to enhance their cost control systems ( $p < 0.05$ ).

Table 11.4 reports the OLS results of the contribution of the entrepreneurial firm's set of control systems to its financial and non-financial performance. Hypothesis 4 about the indirect performance effects of VC service activities is only supported for the mediating effect of incentive and

Table 11.2 Descriptive statistics and Pearson correlations

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. Firm age	21.87	31.25	—										
2. Firm size	49.47	56.99	0.52**	—									
3. ICT/life science industries	0.37	0.48	-0.31**	-0.07	—								
4. Service industry	0.27	0.45	-0.03	0.07	-0.46**	—							
5. Cost control system	4.14	1.16	0.12	0.04	0.02	-0.04	—						
6. Incentive and reward system	66.77	25.20	-0.07	0.15	0.31**	-0.23*	0.02	—					
7. Quality system	45.36	31.72	-0.09	-0.12	-0.09	0.23*	-0.11	0.05	—				
8. VC service activities	1.85	0.74	-0.22*	-0.21*	0.29**	-0.22*	-0.02	0.17	0.10	—			
9. VC monitoring activities	2.67	0.95	-0.16	-0.16	0.35**	-0.14	0.29**	0.20	0.01	0.42**	—		
10. Fin. performance	12.59	3.82	0.15	0.21*	-0.19	0.11	-0.06	0.12	0.28**	-0.14	-0.13	—	
11. Non-fin. performance	12.97	2.83	-0.01	0.02	-0.08	-0.12	0.00	0.30**	0.23*	0.10	0.02	0.42**	—

Note: \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

Table 11.3 The effect of the VC service activities on the entrepreneurial firm's set of control systems (2SLS)

Dependent variable	Equation 1		Equation 2		Equation 3	
	Quality system		Inc. & reward system		Cost control system	
Intercept <sup>a</sup>	48.198***	(23.723)	18.474***	(20.032)	2.152**	(0.963)
Firm age	-0.032	(0.138)	-0.045	(0.116)	0.008	(0.006)
Firm size	-0.071	(0.073)	0.154**	(0.062)	0.001	(0.003)
ICT/life sciences	0.150	(8.974)	5.818	(7.578)	-0.157	(8.283)
Services/sales	16.721*	(9.312)	-5.018	(7.715)	-6.911	(0.389)
VC service activities <sup>b</sup>	-1.505	(9.136)	21.663**	(9.642)	0.963**	(0.475)
F-value	1.251		3.330***		1.046	
R-square	7.01%		16.71%		5.71%	

Notes:

a. Unstandardized regression coefficients with \*  $p < 0.10$ ; \*\*  $p < 0.05$  and \*\*\*  $p < 0.01$ , and standard errors in parentheses.

b. Instrumental variables: percentage of shares held by the VC, the frequency of contact of the entrepreneurial firm with the VC.

Table 11.4 The effect of the set of control systems on the entrepreneurial firm's performance (OLS)

	Equation 1	Equation 2	Equation 3
<i>Dependent variable: financial performance</i>			
Intercept <sup>a</sup>	11.290*** (2.364)	11.387*** (2.466)	10.577*** (2.443)
Firm age	-0.003 (0.015)	0.001 (0.015)	0.002 (0.015)
Firm size	0.011 (0.008)	0.013 (0.008)	0.013 (0.008)
ICT/life sciences	-1.295 (0.984)	-1.685 (1.038)	-1.655* (0.992)
Services/sales	-1.014 (1.029)	-0.740 (1.060)	-1.002 (1.045)
VC monitoring activities	-0.128 (0.490)	-0.032 (0.514)	-0.254 (0.504)
VC service activities	-0.896 (0.583)	-0.567 (0.591)	-0.690 (0.579)
Cost control system	0.196 (0.389)	-0.178 (0.372)	0.036 (0.378)
Incentive and reward system	0.021 (0.017)	0.023 (0.018)	0.022 (0.017)
Quality system	0.030** (0.013)	0.036*** (0.013)	0.041*** (0.013)
VC monitoring × cost control system	-0.828** (0.340)		
VC monitoring × incentive and reward system		0.010 (0.017)	
VC monitoring × quality system			0.026* (0.013)
F-value	2.645***	1.945*	2.390**
R-square	25.57%	20.16%	23.69%

*Dependent variable: non-financial performance*

Intercept <sup>a</sup>	9.799***	(1.816)	9.621***	(1.821)	10.179***	(1.847)
Firm age	-0.010	(0.012)	-0.010	(0.011)	-0.010	(0.011)
Firm size	0.001	(0.006)	0.002	(0.006)	0.000	(0.006)
ICT/life sciences	-1.818**	(0.756)	-2.021**	(0.767)	-1.826**	(0.750)
Services/sales	-1.565*	(0.791)	-1.557*	(0.783)	-1.415*	(0.790)
VC monitoring activities	-0.193	(0.377)	-0.126	(0.380)	-0.126	(0.381)
VC service activities	0.047	(0.448)	0.120	(0.436)	0.132	(0.438)
Cost control system	0.260	(0.299)	0.188	(0.275)	0.133	(0.286)
Incentive and reward system	0.038***	(0.013)	0.041***	(0.013)	0.038***	(0.013)
Quality system	0.018*	(0.010)	0.020*	(0.009)	0.017*	(0.010)
VC monitoring × cost control system	-0.132	(0.261)				
VC monitoring × incentive and reward system			0.012	(0.012)		
VC monitoring × quality system					-0.009	(0.010)
F-value	2.195**		2.279**		2.263**	
R-square	22.18%		22.84%		22.71%	

*Note:* <sup>a</sup> Unstandardized regression coefficients with \*  $p < 0.10$ ; \*\*  $p < 0.05$  and \*\*\*  $p < 0.01$ , and standard errors in parentheses.



reward systems. This means that by helping to set up incentive and reward systems (recall hypothesis 2), the VC service activities positively contribute to entrepreneurial firm performance, as incentive and reward systems are significantly associated with non-financial performance ( $p < 0.01$ ). Furthermore, it appears that entrepreneurial firms which have a quality system are highly associated with financial ( $p < 0.01$ ) and moderately with non-financial performance ( $p < 0.10$ ). However, as previously shown (recall hypothesis 1), entrepreneurial firms do not appear to be stimulated to adopt quality systems by VCs who provide service activities. These findings suggest that hypothesis 4 is only supported with regard to a VC's influence on the entrepreneurial firm to enhance an incentive and reward system.

Hypothesis 5 is moderately supported for the interaction effect between VC monitoring activities and entrepreneurial firms employing quality systems with regard to financial performance ( $p < 0.10$ ). However, contrary to our expectations it appears that this effect is positive, which suggests that quality systems and VC monitoring activities are not complementary but more synergetic in nature. Furthermore, as expected, entrepreneurial firms which have implemented a cost control system are negatively associated with financial performance when receiving VC monitoring activities ( $p < 0.05$ ). Too much emphasis on costs and short-term profits is likely to erode the entrepreneurial firm's profitability. Finally, there is no significant support for the interaction effect of VC monitoring activities and an incentive and reward system on organizational performance.

## DISCUSSION

In this study, a multi-theoretical approach was used in order to resolve the VC 'value-added' proposition by taking account of the entrepreneurial firm's control systems as intermediary factors. In doing so, we simultaneously analysed whether the VC enhances the entrepreneurial firm's control systems, and accordingly contributes to entrepreneurial firm performance. We therefore incorporated two board activities (service and monitoring) and three control systems (quality system, incentive and reward system, cost control) into a set of multivariate regression models.

Our results indicate that VCs play an enabling role for the establishment and the effective use of the entrepreneurial firm's control systems in order to facilitate the entrepreneurial firm's stability and efficiency. We find that VC service activities facilitate the entrepreneurial firm's utilization of cost control and incentive and reward systems. Since such systems are positively significantly related with entrepreneurial firms' non-financial performance, VC service activities can have an indirect effect on organizational

performance. Moreover, entrepreneurial firms employing quality systems which additionally receive VC monitoring activities are moderately associated with high financial performance. Since quality systems produce more transparency about the strengths and weaknesses of the entrepreneurial firm's operational processes, VCs who are keen on monitoring may provide more valuable support by fine-tuning their expertise to the needs of entrepreneurial firms. In doing so, VCs who have a high proficiency in monitoring activities may enhance organizational learning (see Larsson et al., 2000).

We find a negative interaction effect of VC monitoring activities and the use of cost control systems on the entrepreneurial firm's financial performance. This suggests that VCs who rely on these control systems in order to emphasize financial outcomes through their monitoring activities may erode the entrepreneurial firm's performance. Thus, in terms of control, more is not necessarily better. Due to the not only substitutive but also complementary relationship of monitoring mechanisms, principals can increase agency costs by excessive monitoring. The development, implementation and use of control and incentive systems come at a cost not only in terms of their operation but also potentially with regard to behavioural incentives of managers. If the overemphasis of managerial control leads to a loss of trust between entrepreneurial teams and VCs, managers may become mainly concerned with justifying their decisions rather than receiving support from the VC.

The results suggest that VCs tend to pay too little attention to the establishment of quality systems in entrepreneurial firms. This appears to be a failure in the VC's involvement policy, since the adoption of a quality system is strongly related to high organizational financial and non-financial performance. Since quality systems create empowerment and enhance communication in the entrepreneurial firm, VCs who help entrepreneurial firms in setting up such systems may benefit in two ways. First, through empowerment VCs become less dependent on the entrepreneur, since through empowerment firm-specific knowledge rests not solely in the head of the entrepreneur. Second, through picking up firm-specific knowledge created by more advanced communication processes in the entrepreneurial firm, VCs are better able to fine tune the services they provide to the needs of the entrepreneurial firm.

## NOTE

1. We are aware that there are different views about the (arbitrarily chosen) level of acceptability of constructs. These views, among others, depend upon the nature of the domain

that the construct attempts to measure or whether the construct in question is in an explorative stage or not (see also Nunnally, 1978). For the present study, the domains of the constructs are rather broad, particularly given the heterogeneous character of our sample (that is, in terms of the different industries the firms of our sample compete in). From a psychometric perspective, the constructs are rather more explorative measures than repeatedly tested established measures. Van de Ven and Ferry (1979) suggest that Cronbach's  $\alpha$ s should fall between 0.55 and 0.70 for a moderately broad construct, and between 0.35 and 0.55 for three-items scales of a very broad construct. From this perspective, the Cronbach's  $\alpha$ s of our constructs are reasonable. Furthermore, from a statistical point of view, it is important to note that relatively low Cronbach's  $\alpha$ 's are more likely to work *against* this study's findings, because measurement errors may lead to the failure to detect significant effects that are actually present in the population (see also Jaccard et al., 1990: 38). So, our findings are based upon a conservative test.

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